

SPRAY PYROLYSIS DEPOSITION OF MAGNESIUM OXIDE THIN FILMS

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Magnesium oxide seems to be a good candidate regarding its bulk properties: large band gap (7.8 eV), high thermal conductivity and stability and an alternative dielectric to silicon dioxide (SiO_2) to reduce the electric field in capacitive networks. MgO , widely used as a substrate for high-temperature superconductor films deposition, has attracted much attention due to its low dielectric constant, low dielectric loss, and less mismatch with YBCO films. With a low dielectric loss, MgO shows a wide application in microwave devices. Due to its low refractive index, MgO is especially a suitable buffer for epitaxial optical waveguide films.

MgO films can be prepared by a variety of deposition techniques including laser ablation, electron beam evaporation, metal organic chemical vapor deposition, magnetron sputtering, ion beam assisted deposition and spray pyrolysis.

The spray pyrolysis is one of the simplest deposition techniques because of its simplicity and provides large area coatings without high vacuum ambience.

Spray pyrolysis is one of the major techniques used to deposit a wide variety of materials including oxides. The experimental work of spray pyrolysis for growth of MgO thin film was carried out on the device.

The deposition system consists of three general sections which includes: the container of the solution with reactants and carrier gas assembly connected to the spray nozzle, heating system which includes: a heater and thermocouple through, which recorded the temperature of the substrate, the exhausting gas module.

This compound is promising in the application of solar energy, optical and acoustoelectronics. These compounds can be used to set up window and buffer layers. Most experts predict them a long and perspective future.

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